

REMARKS

The Examiner's attention to the present application is noted with appreciation.

In the second paragraph of the Office Action dated January 14, 2004, the Examiner rejected claim 1 under 35 U.S.C §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner stated that it was not clear if the applicant is referring to the percent water or percent ethylene glycol. Claim 1 has been amended to clarify applicant's invention as a method.

In the remaining paragraphs of the Office Action, the Examiner rejects claims 1-31 under 35 U.S.C. §103(a) as unpatentable over Burns et al. (U.S. Patent No. 5,085,793). The Examiner stated the following reasons for the rejection: (1) claim 1 needs clarification; (2) applicant's invention is pre-diluted and contains 50% deionized water and Burns teaches an embodiment diluted with 10-90% water (col 5, lines 5-9); (3) the applicant does not claim a method of making nor a process for mixing, therefore the final composition in the car would be the claimed composition; and (4) Burns teaches a corrosion-inhibited antifreeze composition with a major portion of a liquid alcohol freezing point depressant and a minor portion of at least one hydroxyl-substituted aromatic carboxylic acid and additional corrosion inhibitors.

As described above, claim 1 has been clarified and is now a method claim for the use of the pre-diluted coolant. Claim 1 has been clarified as a method claim, and Burns et al. teaches away from use of a pre-diluted coolant as claimed. In the embodiment where Burns teaches an embodiment diluted with 10-90% of water (col 5, lines 5-9), Burns only states the word "water". Burns uses "deionized water" in other described embodiments, which implies that the embodiment with 10-90% water uses conventional water. Claim 1 has been clarified to distinguish between the use of deionized water, and that the pre-diluted coolant is "free of conventional water". Additionally, because claim 1 is has been clarified as a method claim, a declaration from the inventor or one of ordinary skill in the art is unnecessary.

Applicant's invention is a use of a pre-diluted coolant that inhibits metal corrosion and scale formation in cooling systems and improves lubrication of mechanical scale water pumps because it is a unique composition that is pre-diluted but which comprises no conventional water. As the Examiner

correctly pointed out, Burns does not teach the specific use of cinnamic acids, which corrosion inhibitors to include or exclude, and specific amounts of these components. Pre-dilution allows for direct addition of the coolant, as opposed to trying to ascertain if the dilution amount is correct. This provides for a simpler, more efficient process of using the coolant. The pre-dilution also allows for the increased inhibition of metal corrosion and scale formation and improved lubrication of mechanical scale water pumps, by the prior mixing of the correct components of the applicant's composition. While some components are common to all coolants (e.g., ethylene glycol or a major portion of a liquid alcohol freezing point depressant and a minor portion of at least one hydroxyl-substituted aromatic carboxylic acid and additional corrosion inhibitors) the ability to have the correct composition for a pre-diluted coolant makes it unique. Therefore, Burns neither teaches nor suggests applicant's invention. Rather it teaches away from the claimed method. Accordingly, claim 1 is patentable over Burns et al.

Claims 2-31 are dependent on claim 1 which is believed to be allowable. Therefore, claims 2-31 are allowable over Burns et al.

A Supplemental Disclosure Statement is submitted herewith with references from the corresponding European patent application. Claims as allowed in Europe are attached hereto.

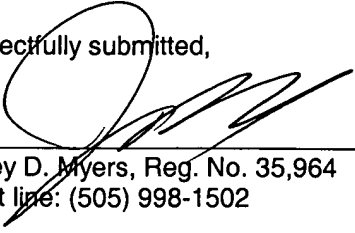
In view of the above amendments and remarks, it is respectfully submitted that all grounds of rejection and objection have been avoided and/or traversed. It is believed that the case is now in condition for allowance and same is respectfully requested.

If any issues remain, or if the Examiner believes that prosecution of this application might be expedited by discussion of the issues, the Examiner is cordially invited to telephone the undersigned attorney for Applicant at the telephone number listed below.

Also being filed herewith is a Petition for Extension of Time to June 14, 2004, with the appropriate fee. Authorization is given to charge payment of any additional fees required, or credit any overpayment, to Deposit Acct. 13-4213.

Respectfully submitted,

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CLAIMS:

1. Use of deionized water free of corrosive ions and scale forming ions and having a specific resistance of at least $10 \times 10,000 \Omega\text{cm}$, or ethylene glycol aqueous solution prepared using such deionized water, or propylene glycol aqueous solution prepared using such deionized water in or as the base component in a pre-diluted coolant ~~intended~~ for direct use in internal-combustion engine systems, wherein said pre-diluted coolant is free of conventional water.
2. Use according to claim 1, wherein said base component contains at least one other ingredient, in an effective amount or amounts, selected from the metal inhibitor group consisting of alkali metal salts and amine salts of phosphoric acids, aromatic carboxylates including benzoic acid and alkali metal salts, ammonium salts and amine salts thereof, alkylbenzoic acids having a chemical structure $\text{R-C}_6\text{H}_4\text{-COOH}$ (R is a C1-C5 alkyl group) and alkali metal salts, ammonium salts and amine salts thereof, alkoxybenzoic acids having a chemical structure $\text{RO-C}_6\text{H}_4\text{-COOH}$ (R is a C1-C5 alkyl group) and alkali metal salts, ammonium salts and amine salts thereof, cinnamic acids, alkylcinnamic acids and alkoxybenzoic acids having a chemical structure $\text{R-C}_6\text{H}_4\text{-CH=CHCOOH}$ (R is a C1-C5 alkyl or alkoxy group) and alkali metal salts, ammonium salts and amine salts thereof, aliphatic carboxylates including C6-C12 aliphatic monobasic acids and C6-C12 aliphatic dibasic acids and their alkali metal salts, ammonium salts and amine salts, aromatic polyvalent carboxylic acids, molybdates, tungstates, vanadates, alkali metal salts of nitric acid, alkali metal salts of silicic acids, alkali metal salts of boric acids, alkali metal salts of nitrous acid, triazole hydrogencarbonate, mercaptobenzothiazole, strontium compounds, 2-phosphonobutane-1,2,4 tricarboxylic acid and alkali metal salts thereof.
3. Use according to claim 1 or 2, wherein alkali metal salts and amine salts of phosphoric acids, alkali metal salts of silicic acids, alkali metal salts of boric acids, alkali metal salts of nitrous acid, aliphatic monobasic acids and aliphatic dibasic acids are excluded and not contained in said base component, wherein at least one of 0.1-5.0 wt.% of p-tert butyl benzoic acid and alkali metal salts thereof, and at least one of 0.01-1.0 wt.% of triazoles are contained in said base component.
4. Use according to claim 1 or 2, wherein 0.01-8.0 wt.% of alkylbenzoic acids having a chemical structure $\text{R-C}_6\text{H}_4\text{-COOH}$ (R is a C1-C5 alkyl group) or their alkali metal salts, ammonium salts or amine salts are contained in said base component.
5. Use according to claim 1 or 2, wherein 0.01-8.0 wt.% of alkoxybenzoic acids having a

chemical structure $\text{RO-C}_6\text{H}_4\text{-COOH}$ (R is a C1-C5 alkyl group) or their alkali metal salts, ammonium salts or amine salts are contained in said base component.

6. Use according to claim 1 or 2, wherein 0.01-8.0 wt.% of cinnamic acids, alkylcinnamic acids or alkoxycinnamic acids having a chemical structure $\text{R-C}_6\text{H}_4\text{-CH=CHCOOH}$ (R is H, or a C1-C5 alkyl or alkoxyl group), or their alkali metal salts, ammonium salts or amine salts are contained in said base component.

7. Use according to claim 1 or 2, wherein alkali metal salts and amine salts of phosphoric acids, alkali metal salts of silicic acids, alkali metal salts of boric acids and alkali metal salts of nitrous acid are excluded and not contained in said base component, wherein 0.1-4.0 wt.% of at least one of sebacic acid and alkali metal salts thereof, and 0.1-3.0 wt.% of at least one of p-tert butylbenzoic acids and alkali metal salts thereof are contained in said base component.

8. Use according to claim 1 or 2, wherein phosphates, amine salts, silicates, borates and nitrites are excluded and not contained in said base component, wherein 0.1-0.4 wt.% of at least one of sebacic acid and alkali metal salts thereof, 0.1-3.0 wt.% of at least one of undecanoic diacid and dodecanoic diacid and their alkali metal salts, and 0.01-1.0 wt.% of at least one of triazoles are contained in said base component.

9. Use according to claim 1 or 2, wherein 0.02-5.0 wt.% of at least one of C6-C12 aliphatic monobasic acids and their salts, and 0.02-5.0 wt.% of at least one of alkoxybenzoic acids having a C1-C5 alkoxyl group and their salts are contained in said base component.

10. Use according to claim 9, further containing 0.1-1.0 wt.% of at least one of triazoles.

11. Use according to claim 9 or 10, wherein amine salts and borates are excluded and not contained.

12. Use according to claim 1 or 2, wherein 0.02-5.0 wt.% of at least one of hexanoic acid and heptanoic acid and their salts, and 0.02-5.0 wt.% of at least one of alkylbenzoic acids having a C1-C5 group and salts thereof are contained in said base component.

13. Use according to claim 12, further containing 0.01-1.0 wt.% of at least one of triazoles.

14. Use according to claim 12 or 13, wherein amine salts and borates are excluded and not contained.
15. Use according to claim 1 or 2, wherein 0.02-5.0 wt.% of at least one of C6-C12 aliphatic monobasic acids and salts thereof, and 0.02-5.0 wt.% of at least one of cinnamic acids, alkylcinnamic acids and alkoxycinnamic acids having a chemical structure $R-C_6H_4-CH=CHCOOH$ (R is a C1-C5 alkyl group or alkoxyl group) and their alkali metal salts, ammonium salts and amine salts are contained in said base component.
16. Use according to claim 15, further containing 0.01-1.0 wt.% of at least one of triazoles.
17. Use according to claim 15 or 16, wherein amine salts and borates are excluded and not contained.
18. Use according to claim 1 or 2, wherein 0.01-8.0 wt.% of at least one of p-toluic acid salts and 0.002-1.0 wt.% of at least one of molybdates are contained in said base component.
19. Use according to claim 18, further containing 0.01-8.0 wt.% of at least one of benzoates.
20. Use according to claim 18, further containing 0.01-8.0 wt.% of p-tert butylbenzoic acid.
21. Use according to any of claims 18-20, wherein nitrites are excluded and not contained.
22. Use according to claim 1 or 2, wherein 0.01-8.0 wt.% of at least one of benzoates, 0.01-8.0 wt.% of p-tert butylbenzoic acid and 0.002-1.0 wt.% of at least one of molybdates are contained in said base component.
23. Use according to claim 22, further containing 0.01-8.0 wt.% of at least one of p-toluic acid salts.
24. Use according to claim 22 or 23, wherein nitrites are excluded and not contained.
25. Use according to claim 1 or 2, wherein 0.01-8.0 wt.% of at least one of benzoates and 0.01-

- 8.0 wt.% of at least one of p-toluic acid salts are contained in said base component.
26. Use according to claim 25, further containing 0.01-8.0 wt.% of p-tert butylbenzoic acid.
27. Use according to claim 25 or 26, wherein nitrites are excluded and not contained.
28. Use according to claim 1 or 2, wherein 0.00002-0.1 wt.% of at least one of strontium compounds is contained in said base component.
29. Use according to claim 1 or 2, containing in said pre-diluted coolant 0.01-3.0 wt.% of at least one of phosphoric acids and salts thereof, 0.001-0.5 wt.% of at least one of molybdic acid, tungstic acid and vanadic acid and their salts, and 0.001-0.5 wt.% of at least one of triazoles and salts thereof.
30. Use according to claim 1 or 2, wherein 0.002-1.0 wt.% of at least one of 2-phosphonobutane=1,2,4 tricarboxylic acids and aqueous solutions thereof, at least one of phosphates, at least one of nitrates, at least one of benzoates and at least one of triazoles are contained in said base component.
31. Use according to claim 30, wherein 0.002-2.0 wt.% of at least one of phosphates, 0.002-1.0 wt.% of at least one of nitrates, 0.02-6.0 wt.% of at least one of benzoates, and 0.01-2.0 wt.% of at least one of triazoles are contained in said base component.